

SEQUENCE LISTING

<110> Curtis, Rory A.J.

<120> NOVEL MEMBERS OF THE CAPSAICIN/VANILLOID RECEPTOR FAMILY OF PROTEINS AND USES THEREOF

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50	55	60		
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65	70	75	80	
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85	90	95		
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Tyr	Leu	Ser	Lys	Thr	Ser	Lys	Tyr	Leu	Thr	Asp	Ser	Glu	Tyr	Thr	Glu	
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ggc	tcc	aca	ggt	aag	acg	tgc	ctg	atg	aag	gct	gtg	ctg	aac	ctt	aag	744
Gly	Ser	Thr	Gly	Lys	Thr	Cys	Leu	Met	Lys	Ala	Val	Leu	Asn	Leu	Lys	
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Asp	Gly	Val	Asn	Ala	Cys	Ile	Leu	Pro	Leu	Leu	Gln	Ile	Asp	Arg	Asp	
130							135						140			
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Ser	Gly	Asn	Pro	Gln	Pro	Leu	Val	Asn	Ala	Gln	Cys	Thr	Asp	Asp	Tyr	
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Asn Ala Val Ser Arg Gly Val Pro Glu Asp Leu Ala Gly Leu Pro Glu
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Tyr Leu Ser Lys Thr Ser Lys Tyr Leu Thr Asp Ser Glu Tyr Thr Glu
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Ser Gly Asn Pro Gln Pro Leu Val Asn Ala Gln Cys Thr Asp Asp Tyr
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Gly Glu Leu Pro Leu Ser Leu Ala Ala Cys Thr Lys Gln Trp Asp Val
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Val Ser Tyr Leu Leu Glu Asn Pro His Gln Pro Ala Ser Leu Gln Ala
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Thr Asp Ser Gln Gly Asn Thr Val Leu His Ala Leu Val Met Ile Ser
 245 250 255

Asp Asn Ser Ala Glu Asn Ile Ala Leu Val Thr Ser Met Tyr Asp Gly
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Phe Ile Asp Ser Tyr Phe Glu Ile Leu Phe Leu Phe Gln Ala Leu Leu		
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Pro Leu Leu Val Ser Ala Leu Val Leu Gly Trp Leu Asn Leu Leu Tyr		
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Tyr Thr Arg Gly Phe Gln His Thr Gly Ile Tyr Ser Val Met Ile Gln		
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Lys Val Ile Leu Arg Asp Leu Leu Arg Phe Leu Leu Ile Tyr Leu Val		
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Trp Arg Pro Glu Ala Pro Thr Gly Pro Asn Ala Thr Glu Ser Val Gln		
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Ile Leu Glu Ala Ser Leu Glu Leu Phe Lys Phe Thr Ile Gly Met Gly		
595	600	605
Glu Leu Ala Phe Gln Glu Gln Leu His Phe Arg Gly Met Val Leu Leu		
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625	630	640
Leu Ile Ala Leu Met Ser Glu Thr Val Asn Ser Val Ala Thr Asp Ser		
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Trp Ser Ile Trp Lys Leu Gln Lys Ala Ile Ser Val Leu Glu Met Glu		
660	665	670

Asn Gly Tyr Trp Trp Cys Arg Lys Lys Gln Arg Ala Gly Val Met Leu
 675 680 685

Thr Val Gly Thr Lys Pro Asp Gly Ser Pro Asp Glu Arg Trp Cys Phe
690 695 700

Arg Val Glu Glu Val Asn Trp Ala Ser Trp Glu Gln Thr Leu Pro Thr
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Leu Cys Glu Asp Pro Ser Gly Ala Gly Val Pro Arg Thr Leu Glu Asn
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ccc ctg ctt gtg tct gcg ctg gtg ctg ggc tgg ctg aac ctg ctt tac Pro Leu Leu Val Ser Ala Leu Val Leu Gly Trp Leu Asn Leu Leu Tyr 500 505 510	1536
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aag gtc atc ctg cgg gac ctg ctg cgc ttc ctt ctg atc tac tta gtc Lys Val Ile Leu Arg Asp Leu Leu Arg Phe Leu Leu Ile Tyr Leu Val 530 535 540	1632
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gag ctg gcc ttc cag gag cag ctg cac ttc cgc ggc atg gtg ctg ctg	1872

Glu Leu Ala Phe Gln Glu Gln Leu His Phe Arg Gly Met Val Leu Leu		
610	615	620
ctg ctg ctg gcc tac gtg ctc acc tac atc ctg ctg ctc aac atg ..	1920	
Leu Leu Ala Tyr Val Leu Leu Thr Tyr Ile Leu Leu Leu Asn Met		
625	630	635
640		
ctc atc gcc ctc atg agc gag acc gtc aac agt gtc gcc act gac agc	1968	
Leu Ile Ala Leu Met Ser Glu Thr Val Asn Ser Val Ala Thr Asp Ser		
645	650	655
tgg agc atc tgg aag ctg ca ^g aaa gcc atc tct gtc ctg gag atg gag	2016	
Trp Ser Ile Trp Lys Leu Gln Lys Ala Ile Ser Val Leu Glu Met Glu		
660	665	670
aat ggc tat tgg tgg tgc agg aag aag cag cg ^g gca ggt gtg atg ctg	2064	
Asn Gly Tyr Trp Trp Cys Arg Lys Lys Gln Arg Ala Gly Val Met Leu		
675	680	685
acc gtt ggc act aag cca gat ggc agc cc ^g gat gag cgc tgg tgc ttc	2112	
Thr Val Gly Thr Lys Pro Asp Gly Ser Pro Asp Glu Arg Trp Cys Phe		
690	695	700
agg gtg gag gag gtg aac tgg gct tca tgg gag cag acg ctg cct acg	2160	
Arg Val Glu Glu Val Asn Trp Ala Ser Trp Glu Gln Thr Leu Pro Thr		
705	710	715
720		
ctg tgt gag gac cc ^g tca ggg gca ggt gtc cct cga act ctc gag aac	2208	
Leu Cys Glu Asp Pro Ser Gly Ala Gly Val Pro Arg Thr Leu Glu Asn		
725	730	735
cct gtc ctg gct tcc ccc aag gag gat gag gat ggt gcc tct gag	2256	
Pro Val Leu Ala Ser Pro Pro Lys Glu Asp Glu Asp Gly Ala Ser Glu		
740	745	750
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15		
gag cta ccc ctc tct ttg gcc gct tgc acc aag cag tgg gat gtg gta	95	
Glu Leu Pro Leu Ser Leu Ala Ala Cys Thr Lys Gln Trp Asp Val Val		
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agc tac ctc ctg gag aac cca cac cag ccc gcc agc ctg cag gcc act	143	
Ser Tyr Leu Leu Glu Asn Pro His Gln Pro Ala Ser Leu Gln Ala Thr		

35	40	45	
gac tcc cag ggc aac aca gtc ctg cat gcc cta gtg atg atc tcg gac Asp Ser Gln Gly Asn Thr Val Leu His Ala Leu Val Met Ile Ser Asp	50	55	191
		60	
aac tca gct gag aac att gca ctg gtg acc agc atg tat gat ggg ctc Asn Ser Ala Glu Asn Ile Ala Leu Val Thr Ser Met Tyr Asp Gly Leu	65	70	239
		75	
ctc caa gct ggg gcc cgc ctc tgc cct acc gtg cag ctt gag gac atc Leu Gln Ala Gly Ala Arg Leu Cys Pro Thr Val Gln Leu Glu Asp Ile	80	85	287
		90	
cgc aac ctg cag gat ctc acg cct ctg aag ctg gcc gcc aag gag ggc Arg Asn Leu Gln Asp Leu Thr Pro Leu Lys Leu Ala Ala Lys Glu Gly	100	105	335
		110	
aag atc gag att ttc agg cac atc ctg cag cgg gag ttt tca gga ctg Lys Ile Glu Ile Phe Arg His Ile Leu Gln Arg Glu Phe Ser Gly Leu	115	120	383
		125	
agc cac ctt tcc cga aag ttc acc gag tgg tgc tat ggg cct gtc cgg Ser His Leu Ser Arg Lys Phe Thr Glu Trp Cys Tyr Gly Pro Val Arg	130	135	431
		140	
gtg tcg ctg tat gac ctg gct tct gtg gac agc tgt gag gag aac tca Val Ser Leu Tyr Asp Leu Ala Ser Val Asp Ser Cys Glu Glu Asn Ser	145	150	479
		155	
gtg ctg gag atc att gcc ttt cat tgc aag agc ccg cac cga cac cga Val Leu Glu Ile Ile Ala Phe His Cys Lys Ser Pro His Arg His Arg	160	165	527
		170	
175			
atg gtc gtt ttg gag ccc ctg aac aaa ctg ctg cag gcg aaa tgg gat Met Val Val Leu Glu Pro Leu Asn Lys Leu Leu Gln Ala Lys Trp Asp	180	185	575
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ctg ctc atc ccc aag ttc ttc tta aac ttc ctg tgt aat ctg atc tac Leu Leu Ile Pro Lys Phe Phe Leu Asn Phe Leu Cys Asn Leu Ile Tyr	195	200	623
		205	
atg ttc atc ttc acc gct gtt gcc tac cat cag cct acc ctg aag aag Met Phe Ile Phe Thr Ala Val Ala Tyr His Gln Pro Thr Leu Lys Lys	210	215	671
		220	
cag gcc gcc cct cac ctg aaa gcg gag gtt gga aac tcc atg ctg ctg Gln Ala Ala Pro His Leu Lys Ala Glu Val Gly Asn Ser Met Leu Leu	225	230	719
		235	
acg ggc cac atc ctt atc ctg cta ggg ggg atc tac ctc ctc gtg ggc Thr Gly His Ile Leu Ile Leu Leu Gly Gly Ile Tyr Leu Leu Val Gly	240	245	767
		250	
		255	
cag ctg tgg tac ttc tgg cgg cgc cac gtg ttc atc tgg atc tcg ttc Gln Leu Trp Tyr Phe Trp Arg Arg His Val Phe Ile Trp Ile Ser Phe	260	265	815
		270	
ata gac agc tac ttt gaa atc ctc ttc ctg ttc cag gcc ctg ctc aca Ile Asp Ser Tyr Phe Glu Ile Leu Phe Leu Phe Gln Ala Leu Leu Thr	275	280	863
		285	

gtg gtg tcc cag gtg ctg tgt ttc ctg gcc atc gag tgg tac ctg ccc Val Val Ser Gln Val Leu Cys Phe Leu Ala Ile Glu Trp Tyr Leu Pro 290 295 300	911
ctg ctt gtg tct gcg ctg gtg ggc tgg ctg aac ctg ctt tac tat Leu Leu Val Ser Ala Leu Val Leu Gly Trp Leu Asn Leu Leu Tyr Tyr 305 310 315	959
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aaa gcc atc tct gtc ctg gag atg gag aat ggc tat tgg tgg tgc agg Lys Ala Ile Ser Val Leu Glu Met Glu Asn Gly Tyr Trp Trp Cys Arg 340 345 350	1055
aag aag cag cgg gca ggt gtg atg ctg acc gtt ggc act aag cca gat Lys Lys Gln Arg Ala Gly Val Met Leu Thr Val Gly Thr Lys Pro Asp 355 360 365	1103
ggc agc ccg gat gag cgc tgg tgc ttc agg gtg gag gag gtg aac tgg Gly Ser Pro Asp Glu Arg Trp Cys Phe Arg Val Glu Glu Val Asn Trp 370 375 380	1151
gct tca tgg gag cag acg ctg cct acg ctg tgt gag gac ccg tca ggg Ala Ser Trp Glu Gln Thr Leu Pro Thr Leu Cys Glu Asp Pro Ser Gly 385 390 395	1199
gca ggt gtc cct cga act ctc gag aac cct gtc ctg gct tcc cct ccc Ala Gly Val Pro Arg Thr Leu Glu Asn Pro Val Leu Ala Ser Pro Pro 400 405 410 415	1247
aag gag gat gag gat ggt gcc tct gag gaa aac tat gtg ccc gtc cag Lys Glu Asp Glu Asp Gly Ala Ser Glu Glu Asn Tyr Val Pro Val Gln 420 425 430	1295
ctc ctc cag tcc aac tgatggccca gatgcagcag gaggccagag gacagagcag Leu Leu Gln Ser Asn 435	1350
aggatcttc caaccacatc tgctggctct ggggtcccag tgaattctgg tggcaaatat 1410	
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Tyr Leu Leu Glu Asn Pro His Gln Pro Ala Ser Leu Gln Ala Thr Asp	

35	40	45
Ser Gln Gly Asn Thr Val Leu His Ala Leu Val Met Ile Ser Asp Asn		
50	55	60
Ser Ala Glu Asn Ile Ala Leu Val Thr Ser Met Tyr Asp Gly Leu Leu		
65	70	75
80		
Gln Ala Gly Ala Arg Leu Cys Pro Thr Val Gln Leu Glu Asp Ile Arg		
85	90	95
Asn Leu Gln Asp Leu Thr Pro Leu Lys Leu Ala Ala Lys Glu Gly Lys		
100	105	110
Ile Glu Ile Phe Arg His Ile Leu Gln Arg Glu Phe Ser Gly Leu Ser		
115	120	125
His Leu Ser Arg Lys Phe Thr Glu Trp Cys Tyr Gly Pro Val Arg Val		
130	135	140
Ser Leu Tyr Asp Leu Ala Ser Val Asp Ser Cys Glu Glu Asn Ser Val		
145	150	155
160		
Leu Glu Ile Ile Ala Phe His Cys Lys Ser Pro His Arg His Arg Met		
165	170	175
Val Val Leu Glu Pro Leu Asn Lys Leu Leu Gln Ala Lys Trp Asp Leu		
180	185	190
Leu Ile Pro Lys Phe Phe Leu Asn Phe Leu Cys Asn Leu Ile Tyr Met		
195	200	205
Phe Ile Phe Thr Ala Val Ala Tyr His Gln Pro Thr Leu Lys Lys Gln		
210	215	220
Ala Ala Pro His Leu Lys Ala Glu Val Gly Asn Ser Met Leu Leu Thr		
225	230	235
240		
Gly His Ile Leu Ile Leu Leu Gly Gly Ile Tyr Leu Leu Val Gly Gln		
245	250	255
Leu Trp Tyr Phe Trp Arg Arg His Val Phe Ile Trp Ile Ser Phe Ile		
260	265	270
Asp Ser Tyr Phe Glu Ile Leu Phe Leu Phe Gln Ala Leu Leu Thr Val		
275	280	285
Val Ser Gln Val Leu Cys Phe Leu Ala Ile Glu Trp Tyr Leu Pro Leu		
290	295	300
Leu Val Ser Ala Leu Val Leu Gly Trp Leu Asn Leu Leu Tyr Tyr Thr		
305	310	315
320		
Arg Gly Phe Gln His Thr Gly Ile Tyr Ser Val Met Ile Gln Lys Lys		
325	330	335
Ala Ile Ser Val Leu Glu Met Glu Asn Gly Tyr Trp Trp Cys Arg Lys		
340	345	350
Lys Gln Arg Ala Gly Val Met Leu Thr Val Gly Thr Lys Pro Asp Gly		
355	360	365

Ser Pro Asp Glu Arg Trp Cys Phe Arg Val Glu Glu Val Asn Trp Ala
 370 375 380

Ser Trp Glu Gln Thr Leu Pro Thr Leu Cys Glu Asp Pro Ser Gly Ala
 385 390 395 400

Gly Val Pro Arg Thr Leu Glu Asn Pro Val Leu Ala Ser Pro Pro Lys
 405 410 415

Glu Asp Glu Asp Gly Ala Ser Glu Glu Asn Tyr Val Pro Val Gln Leu
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cta ccc ctc tct ttg gcc gct tgc acc aag cag tgg gat gtg gta agc	96
Leu Pro Leu Ser Ala Ala Cys Thr Lys Gln Trp Asp Val Val Ser	
20 25 30	

tac ctc ctg gag aac cca cac cag ccc gcc agc ctg cag gcc act gac	144
Tyr Leu Leu Glu Asn Pro His Gln Pro Ala Ser Leu Gln Ala Thr Asp	
35 40 45	

tcc cag ggc aac aca gtc ctg cat gcc cta gtg atg atc tcg gac aac	192
Ser Gln Gly Asn Thr Val Leu His Ala Leu Val Met Ile Ser Asp Asn	
50 55 60	

tca gct gag aac att gca ctg gtg acc agc atg tat gat ggg ctc ctc	240
Ser Ala Glu Asn Ile Ala Leu Val Thr Ser Met Tyr Asp Gly Leu Leu	
65 70 75 80	

caa gct ggg gcc cgc ctc tgc cct acc gtg cag ctt gag gac atc cgc	288
Gln Ala Gly Ala Arg Leu Cys Pro Thr Val Gln Leu Glu Asp Ile Arg	
85 90 95	

aac ctg cag gat ctc acg cct ctg aag ctg gcc aag gag ggc aag	336
Asn Leu Gln Asp Leu Thr Pro Leu Lys Leu Ala Ala Lys Glu Gly Lys	
100 105 110	

atc gag att ttc agg cac atc ctg cag cgg gag ttt tca gga ctg agc	384
Ile Glu Ile Phe Arg His Ile Leu Gln Arg Glu Phe Ser Gly Leu Ser	
115 120 125	

cac ctt tcc cga aag ttc acc gag tgg tgc tat ggg cct gtc cgg gtg	432
His Leu Ser Arg Lys Phe Thr Glu Trp Cys Tyr Gly Pro Val Arg Val	

130	135	140	
tcg ctg tat gac ctg gct tct gtg gac agc tgt gag gag aac tca gtg Ser Leu Tyr Asp Leu Ala Ser Val Asp Ser Cys Glu Glu Asn Ser Val	145 150	155	480 160
ctg gag atc att gcc ttt cat tgc aag agc ccg cac cga cac cga atg Leu Glu Ile Ile Ala Phe His Cys Lys Ser Pro His Arg His Arg Met	165	170	528 175
gtc gtt ttg gag ccc ctg aac aaa ctg ctg cag gcg aaa tgg gat ctg Val Val Leu Glu Pro Leu Asn Lys Leu Leu Gln Ala Lys Trp Asp Leu	180	185	576 190
ctc atc ccc aag ttc ttc tta aac ttc ctg tgt aat ctg atc tac atg Leu Ile Pro Lys Phe Phe Leu Asn Phe Leu Cys Asn Leu Ile Tyr Met	195	200	624 205
ttc atc ttc acc gct gtt gcc tac cat cag cct acc ctg aag aag cag Phe Ile Phe Thr Ala Val Ala Tyr His Gln Pro Thr Leu Lys Lys Gln	210	215	672 220
gcc gcc cct cac ctg aaa gcg gag gtt gga aac tcc atg ctg ctg acg Ala Ala Pro His Leu Lys Ala Glu Val Gly Asn Ser Met Leu Leu Thr	225 230	235	720 240
ggc cac atc ctt atc ctg cta ggg ggg atc tac ctc ctc gtg ggc cag Gly His Ile Leu Ile Leu Gly Gly Ile Tyr Leu Leu Val Gly Gln	245	250	768 255
ctg tgg tac ttc tgg cgg cgc cac gtg ttc atc tgg atc tcg ttc ata Leu Trp Tyr Phe Trp Arg Arg His Val Phe Ile Trp Ile Ser Phe Ile	260	265	816 270
gac agc tac ttt gaa atc ctc ttc ctg ttc cag gcc ctg ctc aca gtg Asp Ser Tyr Phe Glu Ile Leu Phe Leu Phe Gln Ala Leu Leu Thr Val	275	280	864 285
gtg tcc cag gtg ctg tgt ttc ctg gcc atc gag tgg tac ctg ccc ctg Val Ser Gln Val Leu Cys Phe Leu Ala Ile Glu Trp Tyr Leu Pro Leu	290	295	912 300
ctt gtg tct gcg ctg gtg ctg ggc tgg ctg aac ctg ctt tac tat aca Leu Val Ser Ala Leu Val Leu Gly Trp Leu Asn Leu Leu Tyr Tyr Thr	305 310	315	960 320
cgt ggc ttc cag cac aca ggc atc tac agt gtc atg atc cag aag aaa Arg Gly Phe Gln His Thr Gly Ile Tyr Ser Val Met Ile Gln Lys Lys	325	330	1008 335
gcc atc tct gtc ctg gag atg gag aat ggc tat tgg tgg tgc agg aag Ala Ile Ser Val Leu Glu Met Glu Asn Gly Tyr Trp Trp Cys Arg Lys	340	345	1056 350
aag cag cgg gca ggt gtg atg ctg acc gtt ggc act aag cca gat ggc Lys Gln Arg Ala Gly Val Met Leu Thr Val Gly Thr Lys Pro Asp Gly	355	360	1104 365
agc ccg gat gag cgc tgg tgc ttc agg gtg gag gag gtg aac tgg gct Ser Pro Asp Glu Arg Trp Cys Phe Arg Val Glu Glu Val Asn Trp Ala	370	375	1152 380

tca tgg gag cag acg ctg cct acg ctg tgt gag gac ccg tca ggg gca Ser Trp Glu Gln Thr Leu Pro Thr Leu Cys Glu Asp Pro Ser Gly Ala 385 390 395 400	1200
ggt gtc cct cga act ctc gag aac cct gtc ctg gct tcc cct ccc aag Gly Val Pro Arg Thr Leu Glu Asn Pro Val Leu Ala Ser Pro Pro Lys 405 410 415	1248
gag gat gag gat ggt gcc tct gag gaa aac tat gtg ccc gtc cag ctc Glu Asp Glu Asp Gly Ala Ser Glu Glu Asn Tyr Val Pro Val Gln Leu 420 425 430	1296
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gag gcc acc gac tcc ctg ggc aac aca gtc ctg cat gct ctg gta atg Glu Ala Thr Asp Ser Leu Gly Asn Thr Val Leu His Ala Leu Val Met 35 40 45	145
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gac ggg ctt cta caa atg ggg gcg cgc ctc tgc ccc act gtg cag ctt Asp Gly Leu Leu Gln Met Gly Ala Arg Leu Cys Pro Thr Val Gln Leu 65 70 75 80	241
gag gaa atc tcc aac cac caa ggc ctc aca ccc ctg aaa cta gcc gcc Glu Glu Ile Ser Asn His Gln Gly Leu Thr Pro Leu Lys Leu Ala Ala 85 90 95	289
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tca gga ccg tac cag ccc ctt tcc cga aag ttt act gag tgg tgt tac Ser Gly Pro Tyr Gln Pro Leu Ser Arg Lys Phe Thr Glu Trp Cys Tyr 115 120 125	385
ggt cct gtg cggt gta tcg ctg tac gac ctg tcc tct gtg gac agc tgg	433

Gly Pro Val Arg Val Ser Leu Tyr Asp Leu Ser Ser Val Asp Ser Trp			
130	135	140	
gaa aag aac tcg gtg ctg gag atc atc gct ttt cat tgc aag agc ccg			481
Glu Lys Asn Ser Val Leu Glu Ile Ile Ala Phe His Cys Lys Ser Pro			
145	150	155	160
aac cgg cac cgc atg gtg gtt tta gaa cca ctg aac aag ctt ctg cag			529
Asn Arg His Arg Met Val Val Leu Glu Pro Leu Asn Lys Leu Leu Gln			
165	170	175	
gag aaa tgg gat cgg ctc gtc tca aga ttc ttc ttc aac ttc gcc tgc			577
Glu Lys Trp Asp Arg Leu Val Ser Arg Phe Phe Asn Phe Ala Cys			
180	185	190	
tac ttg gtc tac atg ttc atc ttc acc gtc gtt gcc tac cac cag cct			625
Tyr Leu Val Tyr Met Phe Ile Phe Thr Val Val Ala Tyr His Gln Pro			
195	200	205	
tcc ctg gat cag cca gcc atc ccc tca tca aaa gcg act ttt ggg gaa			673
Ser Leu Asp Gln Pro Ala Ile Pro Ser Ser Lys Ala Thr Phe Gly Glu			
210	215	220	
tcc atg ctg ctg ggc cac att ctg atc ctg ctt ggg ggt att tac			721
Ser Met Leu Leu Leu Gly His Ile Leu Ile Leu Leu Gly Gly Ile Tyr			
225	230	235	240
ctc tta ctg ggc cag ctg tgg tac ttt tgg cgg cgg cgc ctg ttt atc			769
Leu Leu Leu Gly Gln Leu Trp Tyr Phe Trp Arg Arg Arg Leu Phe Ile			
245	250	255	
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Trp Ile Ser Phe Met Asp Ser Tyr Phe Glu Ile Leu Phe Leu Leu Gln			
260	265	270	
gct ctg ctc aca gtg ctg tcc cag gtg ctg cgc ttc atg gag act gaa			865
Ala Leu Leu Thr Val Leu Ser Gln Val Leu Arg Phe Met Glu Thr Glu			
275	280	285	
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Trp Tyr Leu Pro Leu Leu Val Leu Ser Leu Val Leu Gly Trp Leu Asn			
290	295	300	
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Leu Leu Tyr Tyr Arg Gly Phe Gln His Thr Gly Ile Tyr Ser Val			
305	310	315	320
atg atc cag aag gtc atc ctt cga gac ctg ctc cgt ttc ctg ctg gtc			1009
Met Ile Gln Lys Val Ile Leu Arg Asp Leu Leu Arg Phe Leu Leu Val			
325	330	335	
tac ctg gtc ttc ctt ttc ggc ttt gct gta gcc cta gta agc ttg agc			1057
Tyr Leu Val Phe Leu Phe Gly Phe Ala Val Ala Leu Val Ser Leu Ser			
340	345	350	
aga gag gcc cga agt ccc aaa gcc cct gaa gat aac aac tcc aca gtg			1105
Arg Glu Ala Arg Ser Pro Lys Ala Pro Glu Asp Asn Asn Ser Thr Val			
355	360	365	
acg gaa cag ccc acg gtg ggc cag gag gag gag cca gct cca tat cgg			1153
Thr Glu Gln Pro Thr Val Gly Gln Glu Glu Pro Ala Pro Tyr Arg			

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Asp Val Val Thr Tyr Leu Leu Glu Asn Pro His Gln Pro Ala Ser Leu			

20	25	30
Glu Ala Thr Asp Ser Leu Gly Asn Thr Val Leu His Ala Leu Val Met		
35 .	40	45
Ile Ala Asp Asn Ser Pro Glu Asn Ser Ala Leu Val Ile His Met Tyr		
50 .	55	60
Asp Gly Leu Leu Gln Met Gly Ala Arg Leu Cys Pro Thr Val Gln Leu		
65 .	70	75
80 .		
Glu Glu Ile Ser Asn His Gln Gly Leu Thr Pro Leu Lys Leu Ala Ala		
85 .	90	95
Lys Glu Gly Lys Ile Glu Ile Phe Arg His Ile Leu Gln Arg Glu Phe		
100 .	105	110
Ser Gly Pro Tyr Gln Pro Leu Ser Arg Lys Phe Thr Glu Trp Cys Tyr		
115 .	120	125
Gly Pro Val Arg Val Ser Leu Tyr Asp Leu Ser Ser Val Asp Ser Trp		
130 .	135	140
Glu Lys Asn Ser Val Leu Glu Ile Ile Ala Phe His Cys Lys Ser Pro		
145 .	150	155
160 .		
Asn Arg His Arg Met Val Val Leu Glu Pro Leu Asn Lys Leu Leu Gln		
165 .	170	175
Glu Lys Trp Asp Arg Leu Val Ser Arg Phe Phe Phe Asn Phe Ala Cys		
180 .	185	190
Tyr Leu Val Tyr Met Phe Ile Phe Thr Val Val Ala Tyr His Gln Pro		
195 .	200	205
Ser Leu Asp Gln Pro Ala Ile Pro Ser Ser Lys Ala Thr Phe Gly Glu		
210 .	215	220
Ser Met Leu Leu Leu Gly His Ile Leu Ile Leu Leu Gly Gly Ile Tyr		
225 .	230	235
240 .		
Leu Leu Leu Gly Gln Leu Trp Tyr Phe Trp Arg Arg Arg Leu Phe Ile		
245 .	250	255
Trp Ile Ser Phe Met Asp Ser Tyr Phe Glu Ile Leu Phe Leu Leu Gln		
260 .	265	270
Ala Leu Leu Thr Val Leu Ser Gln Val Leu Arg Phe Met Glu Thr Glu		
275 .	280	285
Trp Tyr Leu Pro Leu Leu Val Leu Ser Leu Val Leu Gly Trp Leu Asn		
290 .	295	300
Leu Leu Tyr Tyr Thr Arg Gly Phe Gln His Thr Gly Ile Tyr Ser Val		
305 .	310	315
320 .		
Met Ile Gln Lys Val Ile Leu Arg Asp Leu Leu Arg Phe Leu Leu Val		
325 .	330	335
Tyr Leu Val Phe Leu Phe Gly Phe Ala Val Ala Leu Val Ser Leu Ser		
340 .	345	350

Arg Glu Ala Arg Ser Pro Lys Ala Pro Glu Asp Asn Asn Ser Thr Val
355 360 365

Thr Glu Gln Pro Thr Val Gly Gln Glu Glu Glu Pro Ala Pro Tyr Arg
370 375 380

Ser Ile Leu Asp Ala Ser Leu Glu Leu Phe Lys Phe Thr Ile Gly Met
385 390 395 400

Gly Glu Leu Ala Phe Gln Glu Gln Leu Arg Phe Arg Gly Val Val Leu
405 410 415

Leu Leu Leu Leu Ala Tyr Val Leu Leu Thr Tyr Val Leu Leu Leu Asn
420 425 430

Met Leu Ile Ala Leu Met Ser Glu Thr Val Asn His Val Ala Asp Asn
435 440 445

Ser Trp Ser Ile Trp Lys Leu Gln Lys Ala Ile Ser Val Leu Glu Met
450 455 460

Glu Asn Gly Tyr Trp Trp Cys Arg Arg Lys Lys His Arg Glu Gly Arg
465 470 475 480

Leu Leu Lys Val Gly Thr Arg Gly Asp Gly Thr Pro Asp Glu Arg Trp
485 490 495

Cys Phe Arg Val Glu Glu Val Asn Trp Ala Ala Trp Glu Lys Thr Leu
500 505 . 510

Pro Thr Leu Ser Glu Asp Pro Ser Gly Pro Gly Ile Thr Gly Asn Lys
515 520 525

Lys Asn Pro Thr Ser Lys Pro Gly Lys Asn Ser Ala Ser Glu Glu Asp
530 535 540

His Leu Pro Leu Gln Val Leu Gln Ser Pro
545 550

<210> 12
<211> 1662
<212> DNA
<213> *Rattus* sp.

<220>
<221> CDS
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Ser Thr His Ala Ser Ala Leu Ser Leu Ala Ala Cys Thr Lys Gln Trp
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gat gtg gtg acc tac ctc ctg gag aac cca cac cag ccg gcc agc ctg 96
Asp Val Val Thr Tyr Leu Leu Glu Asn Pro His Gln Pro Ala Ser Leu
20 25 30

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gag gcc acc gac tcc ctg ggc aac aca gtc ctg cat gct ctg gta atg      144
Glu Ala Thr Asp Ser Leu Gly Asn Thr Val Leu His Ala Leu Val Met

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35	40	45	
att gca gat aac tcg cct gag aac agt gcc ctg gtg atc cac atg tac Ile Ala Asp Asn Ser Pro Glu Asn Ser Ala Leu Val Ile His Met Tyr	50	55	60 192
gac ggg ctt cta caa atg ggg gcg cgc ctc tgc ccc act gtg cag ctt Asp Gly Leu Leu Gln Met Gly Ala Arg Leu Cys Pro Thr Val Gln Leu	65	70	75 80 240
gag gaa atc tcc aac cac caa ggc ctc aca ccc ctg aaa cta gcc gcc Glu Glu Ile Ser Asn His Gln Gly Leu Thr Pro Leu Lys Leu Ala Ala	85	90	95 288
aag gaa ggc aaa atc gag att ttc agg cac att ctg cag cg ^g gaa ttc Lys Glu Gly Lys Ile Glu Ile Phe Arg His Ile Leu Gln Arg Glu Phe	100	105	110 336
tca gga ccg tac cag ccc ctt tcc cga aag ttt act gag tgg tgt tac Ser Gly Pro Tyr Gln Pro Leu Ser Arg Lys Phe Thr Glu Trp Cys Tyr	115	120	125 384
ggt cct gtg cg ^g gta tcg ctg tac gac ctg tcc tct gtg gac agc tgg Gly Pro Val Arg Val Ser Leu Tyr Asp Leu Ser Ser Val Asp Ser Trp	130	135	140 432
gaa aag aac tcg gtg ctg gag atc atc gct ttt cat tgc aag agc ccg Glu Lys Asn Ser Val Leu Glu Ile Ile Ala Phe His Cys Lys Ser Pro	145	150	155 160 480
aac ccg cac cgc atg gtg gtt tta gaa cca ctg aac aag ctt ctg cag Asn Arg His Arg Met Val Val Leu Glu Pro Leu Asn Lys Leu Leu Gln	165	170	175 528
gag aaa tgg gat cg ^g ctc gtc tca aga ttc ttc ttc aac ttc gcc tgc Glu Lys Trp Asp Arg Leu Val Ser Arg Phe Phe Phe Asn Phe Ala Cys	180	185	190 576
tac ttg gtc tac atg ttc atc ttc acc gtc gtt gcc tac cac cag cct Tyr Leu Val Tyr Met Phe Ile Phe Thr Val Val Ala Tyr His Gln Pro	195	200	205 624
tcc ctg gat cag cca gcc atc ccc tca tca aaa gc ^g act ttt ggg gaa Ser Leu Asp Gln Pro Ala Ile Pro Ser Ser Lys Ala Thr Phe Gly Glu	210	215	220 672
tcc atg ctg ctg ctg ggc cac att ctg atc ctg ctt ggg ggt att tac Ser Met Leu Leu Leu Gly His Ile Leu Ile Leu Leu Gly Gly Ile Tyr	225	230	235 240 720
ctc tta ctg ggc cag ctg tgg tac ttt tgg cg ^g cg ^g cgc ctg ttt atc Leu Leu Leu Gly Gln Leu Trp Tyr Phe Trp Arg Arg Arg Leu Phe Ile	245	250	255 768
tgg atc tca ttc atg gac agc tac ttt gaa atc ctc ttt ctc ctt cag Trp Ile Ser Phe Met Asp Ser Tyr Phe Glu Ile Leu Phe Leu Leu Gln	260	265	270 816
gct ctg ctc aca gtg ctg tcc cag gtg ctg cgc ttc atg gag act gaa Ala Leu Leu Thr Val Leu Ser Gln Val Leu Arg Phe Met Glu Thr Glu	275	280	285 864

tgg tac cta ccc ctg cta gtg tta tcc cta gtg ctg ggc tgg ctg aac Trp Tyr Leu Pro Leu Leu Val Leu Ser Leu Val Leu Gly Trp Leu Asn 290 295 300	912
ctg ctt tac tac aca cgg ggc ttt cag cac aca ggc atc tac agt gtc Leu Leu Tyr Tyr Thr Arg Gly Phe Gln His Thr Gly Ile Tyr Ser Val 305 310 315 320	960
atg atc cag aag gtc atc ctt cga gac ctg ctc cgt ttc ctg ctg gtc Met Ile Gln Lys Val Ile Leu Arg Asp Leu Leu Arg Phe Leu Leu Val 325 330 335	1008
tac ctg gtc ttc ctt ttc ggc ttt gct gta gcc cta gta agc ttg agc Tyr Leu Val Phe Leu Phe Gly Phe Ala Val Ala Leu Val Ser Leu Ser 340 345 350	1056
aga gag gcc cga agt ccc aaa gcc cct gaa gat aac aac tcc aca gtg Arg Glu Ala Arg Ser Pro Lys Ala Pro Glu Asp Asn Asn Ser Thr Val 355 360 365	1104
acg gaa cag ccc acg gtg ggc cag gag gag gag cca gct cca tat cgg Thr Glu Gln Pro Thr Val Gly Gln Glu Glu Pro Ala Pro Tyr Arg 370 375 380	1152
agc att ctg gat gcc tcc cta gag ctg ttc aag ttc acc att ggt atg Ser Ile Leu Asp Ala Ser Leu Glu Leu Phe Lys Phe Thr Ile Gly Met 385 390 395 400	1200
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ctg ttg ctg ttg gcc tac gtc ctt ctc acc tac gtc ctg ctg ctc aac Leu Leu Leu Ala Tyr Val Leu Leu Thr Tyr Val Leu Leu Leu Asn 420 425 430	1296
atg ctc att gct ctc atg agc gaa act gtc aac cac gtt gct gac aac Met Leu Ile Ala Leu Met Ser Glu Thr Val Asn His Val Ala Asp Asn 435 440 445	1344
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gag aat ggt tac tgg tgg tgc cgg agg aag aaa cat cgt gaa ggg agg Glu Asn Gly Tyr Trp Trp Cys Arg Arg Lys Lys His Arg Glu Gly Arg 465 470 475 480	1440
ctg ctg aaa gtc ggc acc agg ggg gat ggt acc cct gat gag cgc tgg Leu Leu Lys Val Gly Thr Arg Gly Asp Gly Thr Pro Asp Glu Arg Trp 485 490 495	1488
tgc ttc agg gtg gag gaa gta aat tgg gct gct tgg gag aag act ctt Cys Phe Arg Val Glu Glu Val Asn Trp Ala Ala Trp Glu Lys Thr Leu 500 505 510	1536
ccc acc tta tct gag gat cca tca ggg cca ggc atc act ggt aat aaa Pro Thr Leu Ser Glu Asp Pro Ser Gly Pro Gly Ile Thr Gly Asn Lys 515 520 525	1584

aag aac cca acc tct aaa ccg ggg aag aac agt gcc tca gag gaa gac 1632
 Lys Asn Pro Thr Ser Lys Pro Gly Lys Asn Ser Ala Ser Glu Glu Asp
 530 535 540

cat ctg ccc ctt cag gtc ctc cag tcc ccc 1662
 His Leu Pro Leu Gln Val Leu Gln Ser Pro
 545 550

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<210> 14
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<212> PRT
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Met Glu Gly Gln Glu Asp Glu Gly Asn
20 25

<210> 15
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Arg Ala Gly

<210> 16
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<223> Description of Artificial Sequence: primer

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<210> 17

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<212> DNA

<213> Artificial Sequence

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<223> Description of Artificial Sequence:primer

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22

<210> 18

<211> 21

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:primer

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21

<210> 19

<211> 20

<212> DNA

<213> Artificial Sequence

<220>

<223> Description of Artificial Sequence:primer

<400> 19

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20

<210> 20

<211> 630

<212> PRT

<213> Homo sapiens

<400> 20

Met Thr Ser Pro Ser Ser Pro Val Phe Arg Leu Glu Thr Leu Asp
 1 5 10 15

Gly Gly Gln Glu Asp Gly Ser Glu Ala Asp Arg Gly Lys Leu Asp Phe
 20 25 30

Gly Ser Gly Leu Pro Pro Met Glu Ser Gln Phe Gln Gly Glu Asp Arg
 35 40 45

Lys Phe Ala Pro Gln Ile Arg Val Asn Leu Asn Tyr Arg Lys Gly Thr

50	55	60
Gly Ala Ser Gln Pro Asp	Pro Asn Arg Phe Asp	Arg Asp Arg Leu Phe
65	70	75
80		
Asn Ala Val Ser Arg Gly	Val Pro Glu Asp	Leu Ala Gly Leu Pro Glu
85	90	95
Tyr Leu Ser Lys Thr Ser Lys Tyr	Leu Thr Asp Ser Glu	Tyr Thr Glu
100	105	110
Gly Ser Thr Gly Lys Thr Cys	Leu Met Lys Ala Val	Leu Asn Leu Lys
115	120	125
Asp Gly Val Asn Ala Cys Ile	Leu Pro Leu Leu Gln	Ile Asp Arg Asp
130	135	140
Ser Gly Asn Pro Gln Pro	Leu Val Asn Ala Gln	Cys Thr Asp Asp Tyr
145	150	155
160		
Tyr Arg Gly His Ser Ala Leu His Ile Ala	Ile Glu Lys Arg	Ser Leu
165	170	175
Gln Cys Val Lys Leu Leu Val Glu Asn	Gly Ala Asn Val	His Ala Arg
180	185	190
Ala Cys Gly Arg Phe Phe Gln Lys	Gly Gln Gly Thr Cys	Phe Tyr Phe
195	200	205
Gly Glu Leu Pro Leu Ser Leu Ala	Ala Cys Thr Lys Gln Trp	Asp Val
210	215	220
Val Ser Tyr Leu Leu Glu Asn Pro His Gln	Pro Ala Ser Leu Gln	Ala
225	230	235
240		
Thr Asp Ser Gln Gly Asn Thr Val	Leu His Ala Leu Val Met	Ile Ser
245	250	255
Asp Asn Ser Ala Glu Asn Ile Ala	Leu Val Thr Ser Met	Tyr Asp Gly
260	265	270
Leu Leu Gln Ala Gly Ala Arg	Leu Cys Pro Thr Val Gln	Leu Glu Asp
275	280	285
Ile Arg Asn Leu Gln Asp Leu Thr Pro	Leu Lys Leu Ala Ala	Lys Glu
290	295	300
Gly Lys Ile Glu Ile Phe Arg His	Ile Leu Gln Arg Glu	Phe Ser Gly
305	310	315
320		
Leu Ser His Leu Ser Arg Lys Phe	Thr Glu Trp Cys Tyr	Gly Pro Val
325	330	335
Arg Val Ser Leu Tyr Asp Leu Ala	Ser Val Asp Ser Cys	Glu Glu Asn
340	345	350
Ser Val Leu Glu Ile Ile Ala	Phe His Cys Lys Ser	Pro His Arg His
355	360	365
Arg Met Val Val Leu Glu Pro	Leu Asn Lys Leu	Leu Gln Ala Lys Trp
370	375	380

Asp Leu Leu Ile Pro Lys Phe Phe Leu Asn Phe Leu Cys Asn Leu Ile
 385 390 395 400
 Tyr Met Phe Ile Phe Thr Ala Val Ala Tyr His Gln Pro Thr Leu Lys
 405 410 415
 Lys Gln Ala Ala Pro His Leu Lys Ala Glu Val Gly Asn Ser Met Leu
 420 425 430
 Leu Thr Gly His Ile Leu Ile Leu Leu Gly Gly Ile Tyr Leu Leu Val
 435 440 445
 Gly Gln Leu Trp Tyr Phe Trp Arg Arg His Val Phe Ile Trp Ile Ser
 450 455 460
 Phe Ile Asp Ser Tyr Phe Glu Ile Leu Phe Leu Phe Gln Ala Leu Leu
 465 470 475 480
 Thr Val Val Ser Gln Val Leu Cys Phe Leu Ala Ile Glu Trp Tyr Leu
 485 490 495
 Pro Leu Leu Val Ser Ala Leu Val Leu Gly Trp Leu Asn Leu Leu Tyr
 500 505 510
 Tyr Thr Arg Gly Phe Gln His Thr Gly Ile Tyr Ser Val Met Ile Gln
 515 520 525
 Lys Lys Ala Ile Ser Val Leu Glu Met Glu Asn Gly Tyr Trp Trp Cys
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 Arg Lys Lys Gln Arg Ala Gly Val Met Leu Thr Val Gly Thr Lys Pro
 545 550 555 560
 Asp Gly Ser Pro Asp Glu Arg Trp Cys Phe Arg Val Glu Glu Val Asn
 565 570 575
 Trp Ala Ser Trp Glu Gln Thr Leu Pro Thr Leu Cys Glu Asp Pro Ser
 580 585 590
 Gly Ala Gly Val Pro Arg Thr Leu Glu Asn Pro Val Leu Ala Ser Pro
 595 600 605
 Pro Lys Glu Asp Glu Asp Gly Ala Ser Glu Glu Asn Tyr Val Pro Val
 610 615 620
 Gln Leu Leu Gln Ser Asn
 625 630